

## The Tasmanian records of the Prickly Arrowgrass

### *Triglochin mucronata* R.Br.

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#### Abstract:

The first Tasmanian record of the Prickly Arrowgrass *Triglochin mucronata* R.Br. was made in a small seasonal lagoon on Vansittart Island in the Furneaux Group in 1969. The Arrowgrass was then found at three sites on Flinders Island. The first two, made in late 1970, were beside the Long Point Saltings and on the nearby Long Point sedge flat. The final early record was made on the inner side of the blocked mouth of Camerons Inlet in 1976. The records made when the Flinders Island localities were searched in 2007, and the two major areas were checked in 2012 and 2013, are set out. The threats to the various localities are noted and suggestions made to safeguard them. The taxon is scheduled, under the Tasmanian *Threatened Species Protection Act* 1995, as 'endangered'. (*The Victorian Naturalist*, 131 (3), 2014, 84–89)

**Key words:** Prickly Arrowgrass, *Triglochin mucronata*, Flinders Island, Vansittart Island, endangered Tasmanian plant.

Note that throughout this account the exotic species are marked by asterisks.

#### The early records: 1969 to 1976

##### *Vansittart Island*

The small seasonal lagoon behind the south-western end of Guncarriage Bay was full in September 1969. It had a margin of Sea Rush *Juncus kraussii* subsp. *australiensis* with a lower layer of Sharp Leaf-rush *Schoenoplectus validus*. The latter extended out into the water, petering in a mat of Hooded Milfoil *Myriophyllum muelleri*.

Eighteen more herbs grew in the Sea Rush belt. The Bucks-horn Plantain *\*Plantago coronopus* was very common.<sup>1</sup> The others included Wiry Centrolepis *Centrolepis polygyna*, Slender Cotula *Cotula vulgaris* var. *australasica*, the delicate form of the Sea Celery *Apium prostratum* subsp. *prostratum*, Shiny Bog-rush *Schoenus nitens*, Creeping Monkey-flower *Mimulus repens*, Woolly Clover *\*Trifolium tomentosum* and Australian Lilaeopsis *Lilaeopsis polyantha*. There was also a very small 'rush' with distinctive buds. Some plants were grown at home and, by 14 November, formed the distinctive fruits of the Prickly Arrowgrass *Triglochin mucronata*. The field notes give no indication of how common this herb was.

##### *Flinders Island*

##### *Long Point Saltings*

In early December 1969 the higher ground within the much-burnt northern edge of this saltings carried Salt Tussock *Austrostipa stipoides* over Beaded Glasswort *Sarcocornia quinqueflora*, Thick-headed Glasswort *Sarcocornia blackiana*, Trailing Hemichroa *Hemichroa pentandra* and Rounded Noon-flower *Disphyma crassifolium* subsp. *clavellatum*. The eight other herbs included Bucks-horn Plantain *\*Plantago coronopus*, White Sebaea *Sebaea albidiflora*, Annual Celery *Apium annuum*, Creeping Brookweed *Samolus repens*, Perennial Rye-grass *\*Lolium perenne*, Prickly Arrowgrass and a mat of Narrow-leaved *Wilsonia wilsonia buckhousei*. The field notes do not say how common the Arrowgrass was.

##### *Long Point Sedge Flat*

In October 1970 the vegetation of the lower ground of the northern remnant of this flat had Coast Saw-sedge *Galmia trifida* as its main dominant. Sea Rush was a minor co-dominant in parts, as was Salt Tussock *Austrostipa stipoides*. The latter grass was also the main

second layer. There were open patches some 20 to 30 yards north of the Palana Road and they carried some Bare Twig-rush *Baumea juncea* and occasional Salt Lawrenzia *Lawrenzia spicata* over low herbs. These were scattered Shiny Bog-rush *Schoenus nitens*, plus Salt Angianthus *Angianthus preissianus*, White Sebaea *Sebaea albidiflora*, Narrow-leaved *Wilsonia*, Tiny Arrow-grass *Triglochin minutissima* and Prickly Arrowgrass.

#### *Camerons Inlet*

The mouth of this extensive inlet is blocked by a broad low dune of largely bare sand. A narrow arm extends north from the inlet's eastern edge. In November 1976 a track ran around its head and then down the eastern side passing through a belt of Beaded Glasswort *Sarcocornia quinqueflora*. The Prickly Arrowgrass was found in this belt in late November 1976. There were no other herbs with it.

#### **The Records of 2007**

##### *Long Point Sedge Flat*

In late October the Prickly Arrowgrass was found at or near the October 1970 site. It was in a gap in the dominant vegetation and just north of the major occurrence of Silky *Wilsonia humilis* of the northern remnant. Salt Tussock was very uncommon here (c. 5%). Salt Angianthus (c. 25%) was dominant, in the lower layer, over Narrow-leaved *Wilsonia* (c. 35%). There were at least 14 plants of Prickly Arrowgrass in the 3 by 3 m site. Some formed small clumps and so it was difficult to establish an exact figure without causing damage. The major occurrence of this visit was near the south-eastern corner where clearing a firebreak had lowered the surface of the soil about 20 years previously. The vegetation is still regrowing. Salt Tussock (c. 15%) and Bare Twig-rush (c. 25%) were dominant over scattered herbs. The native species were Narrow-leaved *Wilsonia*, Swamp Selliera *Selliera radicans*, Salt Angianthus, a Club-rush *Isolepis* sp. and Prickly Arrow-grass. Toad Rush *\*Juncus bufonius*, Buck's-horn Plantain and Coast Barb-grass were sparse and all these exotics were weeded. There were >200 plants of the Prickly Arrowgrass in an area 5 by 2 m. There were also 22 more plants from 11–15 m north-east on the firebreak. There was even less regrowth here and the associated spe-

cies, all of which occur at the major site, were very sparse. Just one more Prickly Arrowgrass was found elsewhere on the block.

The south-western remnant was also examined thoroughly. Only two plants of the Prickly Arrowgrass were found. They were at and by the major south-western patch of the Silky *Wilsonia*. Water lies at this spot, and also at the other localities, each Winter.

##### *Long Point Saltings*

The site of December 1969, on higher ground just north of the northern edge of the saltings, was checked in late October 2007. The strip of land had been burnt several times since 1969. Prickly Arrowgrass was found in one square metre. Trailing Hemichroa was the sparse dominant and Rounded Noon-flower was encroaching on the partly-bare ground. The other herbs were a Club-rush *Isolepis* sp., Salt Angianthus, Coast Barb-grass *\*Parapholis incurva*, Water-buttons *\*Cotula coronopifolia*, Beaded Glasswort and a Sand-spurrey *Spergularia* sp. The Prickly Arrowgrass extended westward in Trailing Hemichroa (c. 30%), Coast Barb-grass (c. 10%), Beaded Glasswort, Creeping Brookweed, Water-buttons and young Rounded Noon-flower.

Just into the northern end of the Saltings, in the gaps between the dominant bushes of the Samphire *Sclerostegia arbuscula*, Prickly Arrowgrass grew amongst Trailing Hemichroa, Beaded Glasswort thinned by dying back, and Rounded Noon-flower.

There were more plants to the eastward in c. 10 m by 10 m of open, died-back Beaded Glasswort but they ceased at the eastern end at the denser growth of Trailing Hemichroa with Glasswort that had not died back.

Taller Prickly Arrow-grass plants were found further to the east where the ground was slightly higher. The Beaded Glasswort had thinned here as well. Rounded Noon-flower was a minor species. Also present were Water-buttons *\*Cotula coronopifolia*, Salt Angianthus, Trailing Hemichroa (also a minor species) and Slender *Cotula* *Cotula vulgaris* var. *australasica*. The latter were very common, >120 plants. There were more than 100 Prickly Arrow-grass plants in 1 by 2 m.

Others extended to the south-east and to 5 m west of the site. More were noticed about 25 m south south-west on a slight rise amongst the Samphire bushes.

### *Mouth of Cameron's Inlet*

The inspection of 22 November began on a largely disused track, in a swale parallel with the coast, north of the inlet's northern extension. Two hundred and thirty-five plants of the Prickly Arrowgrass were found along about 50 m of the track. Very few were more than a metre away from it. The densest section held 62 plants in 2 by 2 m. Sea Rush was the very sparse dominant (c. 2%). Shiny Bog-rush *Schoenus nitens*, Creeping Brookweed and a Club-rush *Isolepis* sp. (all c. 15%) were the main herbs. Wiry Centrolepis and Slender Cotula were both about 10%. There were lesser amounts of seven more herbs including Oval Purse *Hornungia procumbens*, White Sebaea *Sebaea albidiflora*, Salt Couch *Sporobolus virginicus* and Jersey Cud-weed *Pseudognaphalium luteo-album*. About 25% of the spot was bare sand. To judge by the associated species, this site was the least saline of those on Flinders Island.

The inlet's northern extension divides into three short arms. Thirty-four Prickly Arrowgrass plants were counted in a 2 by 1½ metre site between the western and central ones. The major herbs were Beaded Glasswort (c. 35%) and lower Creeping Brookweed (c. 30%). The minor herbs were Trailing Hemichroa, a Club-rush *Isolepis* sp., Australian Lilaeopsis *Lilaeopsis polyantha*, Streaked Arrowgrass *Triglochin striata* and two plants of Tall Blown-grass *Lachnagrostis filiformis*. This site was very fine sand with decayed slime throughout.

The other four sites were on low dunes rising above the saline flat carrying Beaded Glasswort. Only the first will be detailed. It was the southern slope of a small sand mound rising about 45 cm above the general level. The Prickly Arrowgrass would have been missed had the Annual Beard-grass *\*Polypogon monspeliensis* not been weeded. It totalled some 10% before removal. The site also carried Beaded Glasswort (c. 40%), one Dune Thistle *Actites megalocarpus*, Coast Fescue *Austrofestuca littoralis* (c. 5%), Club Rush *Isolepis* sp. (c. 5%), Creeping Brookweed (c. 5%) plus lesser amounts of

Slender Cotula, Tall Blown-grass *Lachnagrostis filiformis*, and Australian Lilaeopsis. There was also just one Dwarf Arrowgrass *Triglochin nanum*. The Prickly Arrowgrass plants were taller than the Beaded Glasswort and totalled about 70 in 3 by 2 m.

The other localities were also on the slopes of dunes rather than on their crests or crowns. They had 35 plants in 2 by 2m, c. 100 scattered in about 20 by 8m, and 16 in 2 by 2m. In all the five sites by the mouth carried about 485 plants. There was no sketch map in the notes of 1976 and the attempt to find that year's locality was unsuccessful. Only one Prickly Arrowgrass was found between the first and second sites of 2007. Motor-cyclists had severely damaged the vicinity, stripping away most of its vegetation. The remnant scattered plants of four species included Beaded Glasswort, as the main herb, and they covered about one third of the surface.

### *Camerons Inlet in 2012 and 2013*

The mouth of Camerons Inlet was visited on 25 November 2012; five of the recorded sites had been under water for many months. Although two of their dunes had partly emerged, just several hardy perennials such as the Beaded Glasswort and the Creeping Brookweed had survived. While the northernmost site, on an abandoned track, had not been flooded, it had been very wet and there was no trace of the Prickly Arrowgrass or of most of the ephemeral herbs that were recorded with it in November 2007.

On 26 October 2013 the water-level was even higher than last year and all but the northernmost site were fully submerged. The southern section of the old track was under water and the balance had been very wet. A hard westerly gale was blowing and, in several minutes, the water moved 5 m to the north, flooding even more of the track. There was no trace of the Arrowgrass or of all but one of the other ephemeral herbs. Three very small sites, on slightly higher sand, were noticed just east and west of the old track. There were 47 Arrowgrass plants in about 7 square m.

### *Long Point Saltings in 2012 and 2013*

The northern end of the Long Point saltings was re-visited several times between October

and November 2012. There was no trace of the Arrowgrass at the main site amongst the Trailing Hemichroa and Beaded Glasswort. The latter, which had died back to a very sparse cover in 2007, had regrown densely. A novel site was found along the northern edge of a strip of ground, to the south-east, rising about 10 cm above the saline flat. The Arrowgrass grew with herbs such as the Annual Celery and Creeping Brookweed, in small gaps amongst the taller growth, along about 12 m of the edge. The densest spot, c. 1.5 by 1 m, carried >200 plants of the Annual Celery and >50 of the Arrowgrass. It would be flooded by the sea during hard gales. On 27 October 2013 just two of the small gaps held Prickly Arrowgrass plants and there were about 30 in all.

On 22 November 2012 another new site was noticed on ground that rose about 30 cm along the western side of the northernmost part of the saline flat. It had been opened by a fire that thinned or killed the former large hassocks of the Salt Tussock *Austrostipa stipoides* about four years previously. The densest growth of the Arrowgrass occurred under the southern edge of a Samphire bush. The ephemeral herbs with it were Salt Angianth, a Barb-grass *\*Parapholis* sp., Annual Celery (in part) and a few plants of a Club-rush *Isolepis* sp. The Arrowgrass also grew elsewhere—even in the open ground—on the site of c. 5 m by 3 m and about 150 plants were present in all. On 27 October 2013 the site was larger, 6 m by up to 7 m, and the count of Arrowgrass plants—approximate because of the often dense growth—was about 455.

Three more sites were found on the uneven salty ground between the northern end of the main flat and the higher ground of the edge of the saltings. One of these includes the small spot recorded in 2007. The southern strip along higher ground held, in 16 m by up to 3 m, about 900 Arrowgrass plants. The strip along the higher ground's northern edge had three lots of Arrowgrass plants: about 80 in 4 m by 2 m, c. 125 in 5 m by 4 m, and about 310 in 6 m by up to 5 m. The plants were easy to count on open ground but very difficult when, as most did, they rose from dense clumps of Beaded Glasswort.

### Early specimens

18.ix.1969 but pressed on 14.xi.1969, Vansittart Island in the small swamp behind the south-western end of Guncarriage Bay. *John Whinray* C514 Australian National Herbarium CANB 534343 ; *M* 1 592, National Herbarium of Victoria MEL 534344.

Note that, despite the different collecting numbers, the material at CANB is the duplicate of MEL's specimen. 11.x.1970, northern remnant of the Long Point sedge flat, Flinders Island. *John Whinray* M2 125, MEL 576428; 21.xi.1976, western side of blocked mouth of Camerons Inlet, *John Whinray*, C2 275, CANB 533420; M2 212, MEL 589118.

### The extension of the range of the Prickly Arrowgrass

According to Walsh and Entwisle (1994: 140), the Prickly Arrowgrass occurs in Western Australia, South Australia and Victoria. It is known in the latter '... in herbfields on damp saline soils of salt-flats and coastal saltmarshes.' They map it at three coastal sites in and by the western side of the mouth of Port Phillip Bay and one coastal locality beside the South Australian border. Their three inland sites are in western and south-western Victoria. The Tasmanian records extend the taxon's range by about 400 to 420 km to the south-east of the Port Phillip localities.

### Other Furneaux Group Saltings

Seven other potential sites have been inspected on Flinders Island. Prickly Arrowgrass has not been noticed during many visits to the mouth, and most of the shore, of the Pot Boil Lagoon in the island's south-eastern corner. It was also not found during several visits to the saltings of Patriarchs River. There are small arcing patches of saltmarsh along part of the eastern shore of the eastern arm of North East River but the Arrowgrass was not present with the other herbs. About half of the long saltings of the head of Petrification Bay was inspected in late 2012 but it has no habitat suitable for the Arrowgrass. The minor marsh north-east of Trousers Point was also visited last year but there was no sign of the species. Both the eastern and western edges of the Long Point Saltings were examined too. The inspected western section had no annual herbs.



Some occurred in parts of the eastern edge but the Arrowgrass was not one of them.

The extensive saltings by the mouth of Deep Bay River, on the northern coast of Cape Barren Island, were checked in November 2007. They carried less than ten plant species and their few herbs did not include the Arrowgrass. The largest lagoon on Long Island, checked in 2007 and 2010, also lacked the species.

### Systematic Surveys

The sites flooded near the mouth of Camerons Inlet must have been inundated innumerable times during the past few centuries. A continuing survey would show how well they recover when the water level drops at last, whether any seeds survive at the five flooded localities, and if the water has moved seeds to novel spots.

Just one of the sites of 2007 in the northern end of the Long Point saltings held plants in 2012. The survey of 2013 found all of the current sites of this area and showed that the two novel localities of 2012 had changed. It is obvious that the total population is likely to vary from year to year. A survey lasting several years should elucidate any changes.

### Recommendations

#### *Vansittart Island*

The small lagoon at Vansittart Island is on freehold land and is mapped as c. 75 by 70 m (Tasmap 2003). Its association of herbs was rich in 1969, and the dense mat of the Hooded Milfoil was the first recorded Tasmanian occurrence of this floating herb. The latter has since been scheduled as 'rare' under the Tasmanian *Threatened Species Protection Act 1995*. The lagoon has been open to cattle for more than two decades and so is likely to have suffered serious damage in the meanwhile. It should be inspected in November and—if warranted—an arrangement made with the manager of the island to fence it, including a buffer zone. It should also be assessed to work out whether a program of weeding would be useful.

#### *Long Point Sedge Flat and Saltings*

The northern and south-western remnants of the Long Point *Gahnia trifida-Austrostipa stipoides* flat are on freehold land and so their survival is problematical.

Their slightly higher ground carries the main extant sections of the southernmost Australian site of the Creeping Myoporum *Myoporum parvifolium*. This shrub grows as part of the dominant sedge's understorey. The remnants' patches of the Silky Wiltonia *Wiltonia humilis* are three of the six occurrences yet known for Flinders Island. Plants of the Tiny Arrowgrass *Triglochin minutissima* also occur in the northern area. These three taxa are all scheduled as 'rare' under the Tasmanian *Threatened Species Protection Act 1995*.

While the two plants of the endangered Prickly Arrow-grass of the south-western remnant are not significant, the c. 240 plants of the northern remnant are numerous enough to be important. In addition the major vegetation of both remnants, with its associated scheduled species, is unique to the islands of Banks and eastern Bass Straits. These values should be enough to warrant the purchase of both areas, with buffer zones. They would need care to preserve them. This would include removing weed and pasture species encroaching from the adjacent grazed ground.

The higher ground between the northern end of the Long Point Saltings, and the road, would stay in better shape, if the irresponsible burning—which serves no useful purpose—could be stopped. Its cessation would slow the influx of exotic weeds and pasture plants. The variable occurrence of the Prickly Arrowgrass in the northern end of the Saltings has four weeds so far. Three of them could be weeded effectively but the Coast Barb-grass would be a more difficult problem. Work would probably have to be done for at least two seasons in succession. As well, the Tall Fescue *Festuca arundinacea* has reached the road verge around the northern end of the saltings since 2007 and is spreading through the often burned grassy margin to the edge of the saline flat. If not controlled it will swamp most of the sites of the Arrowgrass.

#### *Mouth of Cameron's Inlet*

The main sites of this vicinity are not currently threatened by motor-cycle or four-wheel drive traffic but the vicinity should be checked regularly as—despite a sign forbidding it—new tracks are being formed. The Buck's-horn Plantain *Plantago coronopus* is the main cover

of the turning circle at the end of the road to the mouth of the inlet. It should be sprayed later this year but will require attention for at least two years thereafter. Just one plant had reached the northern site of the Arrowgrass by late 2007. While the Annual Beard-grass was weeded from three spots further south, the area needs to be checked and cleared each season if the grass, and any other exotics that appear, are to be prevented from crowding out the rare herbs. Plants of the Sea Spurge *Euphorbia paralias* were, early in May 2010, pulled from two of the Prickly Arrowgrass's mounds. Seeds of this weed will continue to wash in from the adjacent coast and also spread from the dunes fronting the sea by the northern extension of the inlet's eastern edge. A possible answer to the problem of weeds would be the formation of a Friends Group to work each year—not just at the mouth of Camerons Inlet—but also in other sensitive coastal inlets and saltings.

#### The status of the Prickly Arrowgrass in Tasmania

While more plants of the Prickly Arrowgrass were found in the northern end of the Long Point Saltings in 2007, there was no trace of most of their sites in 2012. The finds of 2013 showed the vicinity to have the largest number of plants recorded to date. The absence of plants at the major locality, and the flooding of all of the others near the mouth of Camerons Inlet in 2012, also showed that the occurrences of the Arrowgrass at this major locality are not

stable. The author's nomination in 2007 of the taxon resulted in its being scheduled, under the Tasmanian *Threatened Species Protection Act* 1995, as 'endangered'. Given the small total area occupied by the plants at their most extensive in 2007, their absence from other salt marshes on Flinders Island, a major saltings on Cape Barren Island, and a saline lagoon on Long Island, the taxon's status of 'endangered' remains thoroughly appropriate.

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### One Hundred Years Ago

#### The Mallee: Ouyen to Pinnaroo Botanical notes

By A. D. Hardy, F.L.S., State Forests Department, Melbourne.  
(Read before the Field Naturalists' Club of Victoria, 14th July, 1913)

The country here was still open, with clumps of mallee 15 to 18 feet high as at Wymlet, almost flat, with an absence of pines, and with a little "Porcupine" — a most appropriate name for the grass tussocks named on departmental plans "Spinifex" and by the Plant Records Committee "False Spinifex." There is nothing false about this plant, *Triodia irritans*. It pretends not at all; but the small hemispherical tussocks resemble nothing so much, in the distance, as a porcupine with quills erect, and I strongly advocate this vernacular for adoption. In places it grows to a height of 3 feet and 3 or 4 feet across, with fruiting-stems reaching to the saddle-top.

From *The Victorian Naturalist* XXX, pp. 153, January 8, 1914